

85
BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

MONTRÉAL MEETING,

August 27th to September 3rd, 1884.

FIRST REPORT

ON CONVEYANCE

AS ADOPTED BY THE EXECUTIVE COMMITTEE.

Montreal:

PRINTED BY THE GAZETTE PRINTING COMPANY.

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CANADA EAST & WEST.



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GRAND TRUNK

The Great INTERNATIONAL



GENERAL OFFICES

J. STEPHENSON,
Gen'l Passenger Agent.

W. EDGAR,
Ass't Gen'l Pass'r Agent.

UNITED

E. P. BEACH, General Agent, 271 Broadway, . . .
WM. F. SMITH, Eastern Passenger Agent, 271 Broadway, . . .
J. H. WHITMAN, Passenger Agent, . . .
W. ROBINSON, " . . .

TRUNK Railway of CANADA

INTERNATIONAL ROUTE Between the EAST & WEST.



LOCAL OFFICES, MONTREAL, CANADA.

MANAGER,	L. J. SEARGEANT,	JOSEPH HICKSON,	W. WAINWRIGHT,
Assistant Gen'l Pass'r Agent.	Traffic Manager.	Gen'l Manager.	Assistant Manager.

UNITED STATES AGENCIES:

Broadway,	New York.	W. C. TALLMAN, New England Passenger Agent,	Boston.
"	"	G. B. OSWELL, Passenger Agent,	Ogdensburg.
"	Chicago.	T. D. SHERIDAN, " "	Buffalo.
"	Detroit.	F. H. SMALL, " "	Bangor, Me.
		for Maine and the Lower Provinces,	

GRAND TRAIL

A The Great INTERNATIONAL



TRAVELLING ARRANGEMENTS.

A.—OCEAN STEAMERS.

The various steamship companies will make reductions in their rates of ocean-passage to *all members* (whether life, annual, or associate) of the British Association who may desire to attend the Montreal meeting, as follows :—

CANADIAN LINES.

Allan Line of Steamships.—*Address : Messrs. Allan Bros. & Co., James Street, Liverpool.*—This line will make an abatement of *three guineas* from the ordinary fares, so that the return-rates (*exclusive* of the government grant), between Liverpool and Quebec, will be nineteen (19), twenty-two (22), and twenty-seven (27) guineas, according to the accommodation. The return-rates between Liverpool and Halifax will be practically the same.

Holders of return-tickets, will have the privilege of sailing from any of the United States or Canadian ports, at which the mail steamers of this line call.

Single tickets, outwards, will be charged at the full ordinary rates, viz., from twelve (12) to twenty-one (21) guineas (*exclusive* of the government grant), but should the holders of such tickets return by an Allan steamer, they will be entitled, on application to Messrs. H. & A. Allan, Montreal, to a homeward cabin-passage at the reduced rate of £12 10s.

The mail steamers of this line leave Liverpool every Thursday for Quebec, and on alternate Tuesdays for Halifax ; but in all probability, should the applications

for passages be sufficiently numerous, the company will send one of their newest and most powerful vessels as a special steamer.

The sailing days from Canada are every Saturday from Quebec, and alternate Mondays from Halifax. The outward Halifax steamers proceed to Baltimore, and leave that port, for return to Halifax and Liverpool, on alternate Tuesdays.

The Allan company also maintains a weekly service of steamers between Glasgow and Quebec, leaving the former port every Wednesday. These steamers do not take passengers *from* America.

RAILWAY CONNECTIONS.—The distance from Quebec to Montreal is 172 miles by rail, 160 miles by water ; the time is about six hours by rail, and eleven hours (night) by water ; the fare for the *double* journey is about 14/3 by rail, and 10/2 by water.

The distance from Halifax to Quebec is 686 miles ; the time is about twenty-six hours ; the fare *free*. On this route, the passenger may visit St. John, New Brunswick, *via* Moncton. The distance from Moncton to St. John is 90 miles, the time about three hours, and the fare *free*. (See government railways below.)

Passengers disembark at the wharves at Quebec and Halifax, and are transferred to the railway cars, without cost.

Dominion Line of Steamships.—*Address : Messrs. Flinn, Main & Montgomery, 24 James Street, Liverpool.*—The return-rates (*exclusive* of the government grant), by any of the regular steamers of this line, from Liverpool to Quebec, will be seventeen or twenty-one pounds (£17 or £21), according as the accommodation is in a three- or in a two-berth cabin.

In all probability this company, providing the applications are sufficiently numerous, will send out one of their best and newest vessels as a special steamer, in

which case the return-rates (*exclusive* of the government grant), will be twenty and twenty-four pounds (£20 and £24) per passenger, in the three- and two-berth cabins, respectively.

The "Sarnia" and "Oregon" of this line, carry neither cattle nor sheep. The company's steamers leave Liverpool every Thursday, and on the return-voyages, leave Quebec every Saturday.

RAILWAY CONNECTIONS.—The same as those specified for the Allan line from Quebec.

Canada Shipping Company.—*Address : Mr. R. W. Roberts, Manager, 21 Water Street, Liverpool.*—The return-rates (*exclusive* of the government grant), by any of the ordinary steamers of this line, from Liverpool to Montreal, will be eighteen pounds (£18).

The steamers leave Liverpool every Thursday, and on the return-voyage leave Montreal every Wednesday.

Cattle and sheep are usually carried on the return-voyage.

RAILWAY CONNECTIONS.—The passengers have the option of disembarking at Montreal or Quebec ; in the latter case, the railway connections are the same as those specified for the Allan line.

UNITED STATES LINES.

The White Star Line of Steamships.—*Address : Messrs. Ismay, Imrie & Co., 10 Water Street, Liverpool.*—The return-rates from Liverpool to New York, by any of the ordinary steamers of this line, will be from thirty to thirty-five (30 to 35 guineas, according to the accommodation.

The company express an intention, if the applications for passages are sufficiently numerous, of sending a special steamer to New York, during the first or second week of August, by which the return-rates, will be twenty-two, twenty-five and thirty pounds (£22, £25 and £30) according to the accommoda-

tions. The company, however, reserve to themselves the right, if the vessel is not full a few weeks before the date of sailing, of filling her up with other passengers.

The mail steamers of this line leave Liverpool every Tuesday or Thursday, and on the return-voyages leave New York every Tuesday or Saturday, and sometimes on both days.

RAILWAY CONNECTIONS.—(See details of railway arrangements). The distance from New York to Montreal is from 380 to 400 miles by different routes; the time is about 14 hours; the fare for the double journey 45/2, the cost of transfer from the wharves to the railway dépôt about 5/-.

The Cunard Line of Steamships.—*Address: The Cunard Steamship Co., Limited, 8 Water Street, Liverpool.*—The ordinary return-rates, by the steamers of this line, from Liverpool to New York or Boston, are thirty (30) guineas, thirty-five (35) guineas, and forty-five pounds (£45), according to the accommodation; but to members of the British Association, the forty-five pound berths will be given for thirty-five guineas, and the thirty-five guinea berths for thirty guineas.

The mail steamers of this line leave Liverpool every Saturday for New York, and every Wednesday for Boston; on the return-voyages, they leave New York every Wednesday, and Boston every Saturday.

RAILWAY CONNECTIONS.—(See details of railway arrangements). Those from New York to Montreal are the same as specified for the White Star line.

The distance from Boston to Montreal is from 350 to 400 miles, by the various routes; the time from 11 to 13 hours; the fare for the double journey about 37/-; the cost of transfer from the wharves to the railway dépôt about 5/-.

Guion Line of Steamships.—*Address: Messrs. Guion & Co., 11 Rumford Place, Liverpool.*—The return-rates, from Liverpool to New York will be twenty-two, twenty-five, and thirty pounds (£22, £25, and £30) according to the accommodation, by any of the steamers of this line in which there may be room when applications for passages are made.

The mail steamers leave Liverpool every Saturday, and on the return-voyage, leave New York every Thursday.

RAILWAY CONNECTIONS.—The same as those specified for the White Star line.

Anchor Line of Steamships.—*Address: Messrs. Henderson Bros., 17 Water Street, Liverpool.*—The return-rates, (*exclusive* of the government grant), from Liverpool to New York by the steamers of this line, will be twenty-five (25) and thirty (30) guineas per passenger according to accomodation.

The service between Liverpool and New York is tri-monthly, and the dates of sailing are duly advertised. This company also maintains a weekly service between Glasgow and New York, leaving the former port every Friday, and the latter every Saturday.

RAILWAY CONNECTIONS.—The same as those specified for the White Star line.

The Monarch Steamship Line.—*Address: Messrs. John Paton & Co., Fenchurch Avenue, London, E.C.*—The return-rates, (*exclusive* of the government grant), from London to New York by the steamers of this line will be twenty-one pounds (£21) to a limited number of the members of the British Association.

The dates of sailing may be obtained at the above address.

RAILWAY CONNECTIONS.—The same as those specified for the White Star line.

Other Steamship Lines.—The Inman and National lines have each a weekly service between Liverpool and New York, and the American line performs a weekly service between Liverpool and Philadelphia.

Members taking the Philadelphia route, will be conveyed by rail between Philadelphia and New York, (90 miles, time three hours,) at the reduced fare of 10/4. From New York to Montreal, the arrangements will be the same as specified for the White Star Line.

Two Maps accompany this report—one showing the principal steamship routes between Britain and North America, together with the leading lines of railway throughout the Dominion; the other showing the Canadian Pacific Railway and its connections.

N. B.—The foregoing steamship and railway arrangements apply to all members of the British Association whether life, annual or associate.

Through railway-tickets may be purchased at the offices of the steamship companies in Liverpool, or at the port of debarkation in America.

The privilege of reduced fares will be granted on presentation of a certificate, which may be procured from Prof. T. G. Bonney.

The reduced railway fares will be available to members from the first of August to the end of September.

B.—RAILWAYS.

The Government Railways.—The Hon. Sir Charles Tupper, High Commissioner of Canada and Minister of Railways and Canals, has authorized the Committee to state that members of the British Association, with their families, will be conveyed over the government railways throughout the Dominion free of charge, on presentation of their tickets of membership. This privilege will be especially valuable to those members who may desire to proceed to Montreal *via* Halifax; which is the Atlantic terminus of the Intercolonial Railway. From Halifax, the railway extends eastward, *via* Truro, to Pictou, and westward, *via* Moncton, to Quebec; with a branch-line from Moncton to St. John, N.B. Members desirous of visiting Prince Edward Island, may travel by this railway from Halifax to Pictou, (44 miles), and thence by steamer to Charlottetown, P.E.I.; a further journey of about four hours. The Island railways are also government property, and are free to members. The return-journey may be varied by taking the ferry steamer from Summerside to Shediac, and thence proceeding by rail, *via* Moncton, to Quebec or to St. John, N.B.

Guide Books of the Intercolonial Railway may be obtained at the office of the High Commissioner, 9 Victoria Chambers, Westminster, London, S. W.

The Canadian Pacific Railway Co. will, from the 1st of July, up to the date of the departure of the special free excursion to the Rocky Mountains, grant to visiting-members, free passes over its lines to the Northwest (Rocky Mountains, Lake Superior, etc.) and intermediate points. Meals may be obtained *en route*, at a rate not exceeding 2/- (50 cents).

This company also offers to one hundred and fifty (150) members of the British Association, a free special excursion to the Rocky Mountains, by way of Georgian Bay, Thunder Bay and Winnipeg. Those places passed during the night on the outward journey, will be re-passed during the day on returning. The company will provide the necessary sleeping-cars, and undertakes that meals shall be obtainable at a rate not exceeding 2/- (50 cents). The excursion will leave Montreal as soon after the close of the meeting as may be found convenient, and will require about twelve days for its accomplishment. Members who desire to take part in the excursion should communicate with Prof. Bonney as soon as possible.

At an early date, the company will have in operation two lines to the Northwest—one *via* Ottawa, Pembroke and Callender, to Algoma (situate at the north-west end of Lake Huron, and distant from Montreal about 540 miles)—the other *via* Ottawa, Perth and Peterborough to Toronto, and thence by the Toronto, Grey & Bruce branch, to Owen Sound (situate on Lake Huron at the south end of Georgian Bay). From Owen Sound and Algoma, the lake service will be performed by the company's new Clyde-built steamships, passing through Georgian Bay and Lake Superior to Port Arthur, at the western end of the latter lake; the duration of the voyage from Owen Sound being about forty hours. It is intended that the excursionists should go west by the latter route, which passes through some of the longest settled and best known districts of the province of Ontario. Arrangements will be made for trips and excursions from Toronto, across Lake Ontario to Niagara, under the direction of local committees to be formed in both places; giving to all members an opportunity of visiting the Falls. From Port Arthur westward, the railway passes through the towns of Winnipeg, Brandon, Regina, Medicine Hat and Calgary, before

reaching Stephen (the summit-level of the Rocky Mountains), the entire distance being about fourteen hundred miles. The running time from Port Arthur to Winnipeg is about twenty hours, and about forty from Winnipeg to Stephen. On the return-journey, members may vary their route, by passing from Winnipeg over the company's line to Emerson and St. Vincent, and thence southward through the United States, *via* St. Paul and Chicago; the cost and mileage of this return-route is given on another page. One of the Canadian Pacific Railway maps will accompany this report, and members may obtain all further information from the company's general emigration-agent, Mr. Alexander Begg, 88 Cannon street, London, E. C.

The company will also arrange for excursions from Montreal to Brockville, by way of Ottawa; thereby giving members an opportunity of visiting the Thousand Islands, and returning by steamer through the Long Sault, Coteau, Cedar, Cascade and Lachine Rapids.

The Canada Atlantic Railway Co. offers to members of the British Association and their families free excursions to Coteau and Ottawa, returning by the rapids; and also free-passes, by any of the ordinary trains, over the same route. This railway extends from Montreal to Coteau, 37 miles, over the Grand Trunk line, and thence to the city of Ottawa, 78 miles. The time from Montreal to Ottawa is about three hours.

The Grand Trunk Railway Co. has made favourable arrangements with its connecting railways, under which, those members who may wish to proceed to Montreal *via* New York, Boston, or Philadelphia, will be conveyed to and from Montreal at about one-half the usual rates. A wide choice of routes will be afforded, with opportunities of seeing the River Hudson, Saratoga, Lake George, Lake Champlain, etc., when on the way from New York.

This company has also made arrangements, which will enable those members who may desire it, to vary their return-journey from the Northwest, by leaving the Canadian Pacific Railway at Winnipeg, and returning to Montreal *via* St. Vincent, St. Paul, Minneapolis, Chicago, and Niagara Falls, the fares being about one-half the usual rates.

The company has also offered, on the same liberal terms, an excursion to Chicago *via* the great lakes, and one to Niagara Falls.

Members may obtain time-tables, maps, and all other information, at the Company's London office, Dashwood House, 9 New Broad Street, E. C.

The North Shore Railway extends from Montreal to Quebec, on the north side of the River St. Lawrence ; distance 172 miles, time about five hours. This company will give an excursion to Quebec by special trains, at 10/6 for the double journey, and passages to members on the regular trains, at reduced rates. An excursion will also be arranged to Three Rivers (74 miles), and thence by a branch to Grand-Piles (30 miles)—a large lumbering and forest region, near to which are the Shawenegan Falls.

The Central Vermont Railroad connects with the Grand Trunk Railway at St. Johns, 27 miles south from Montreal, and reaches, with its connections, all the important points in New England lying between the cities of New York and Boston. *An excursion to Lake Champlain, Waterbury and the Green Mountains of Vermont, will be arranged over this railway.

The South Eastern Railway, which, with its connections, is called the Montreal and Boston Air Line, affords communication with all important New England points between Boston and Portland, including the White Mountains. An excursion will be arranged, by this

railway, to Newport, Vermont (distance 100 miles, time about four hours), and thence by steamer to the outlet of Lake Memphremagog, returning to Montreal by the same route.

The Delaware and Hudson Canal Co.'s railways connect with the Grand Trunk Railway at Rouses Point, 50 miles south of Montreal, and extend thence along the west shore of Lake Champlain, into the states of New York and Pennsylvania. An excursion will be arranged from Montreal to Plattsburg on Lake Champlain, and thence to Au-Sable Chasm in the Adirondacks, returning by the same route.

The Richelieu and Ontario Co. has a steamer leaving Montreal for Québec every week-day at 7 o'clock p.m.; also another leaving every week-day at noon for Toronto, Hamilton, and Niagara. Reduced fares will be arranged for, and also one or two excursions.

Through Tickets, in accordance with the above arrangements, may, on presentation of a certificate to be obtained from Prof. T. G. Bonney, be procured as follows:—In *England*, at the offices of the various steamship companies; in *Montreal* and *Quebec*, at the Grand Trunk Railway stations; in *New York*, at the New York Central Railway, Grand Central dépôt, 42nd street, and at the New York, West Shore and Buffalo dépôt; in *Boston*, at the Boston and Lowell dépôt, either for the Central Vermont, or for the Montreal and Boston Air Line; in *Philadelphia*, at the Pennsylvania Railway dépôt; in *Chicago*, at the Chicago and Grand Trunk dépôt, corner of 4th Avenue and Polk streets; in *St. Paul*, at the Union dépôt, for the Chicago, Rock Island and Pacific, the Chicago and Northwestern, and the Chicago, Milwaukee and St. Paul Railways.

N.B.—All the railway-companies, referred to herein, grant the privilege of breaking the journey at points of interest.

Sleeping-berths in cars average about 8/- a night, and seats in day palace-cars about 6/3 a day for each passenger. Meals in dining-cars and refreshment-rooms are charged for at the rate of from 2/- to 3/-.

Telegraphs.—Through the liberality of the Great Northwestern and Western Union telegraph companies, telegraphic messages from members of the Association will, during the meeting, be sent from Montreal to all parts of Canada and the United States, free of charge.

Local Committees will be organized in the various Canadian cities to be visited,—as Halifax, St. John, Quebec, Ottawa, Kingston, Toronto, Hamilton, London, Winnipeg, etc., etc.—to receive excursionists and visiting-members, and to care for them during their stay.

Two or more members of the Montreal committee will also accompany each excursion as conductors.

Hotel Rates throughout Canada seldom exceed three dollars (12/6) per diem. A list of hotels and of special rates will be given in the Guide Book.

Money.—The sovereign is a legal tender throughout Canada for four dollars and eighty-six and two-third cents (\$4.86 $\frac{2}{3}$). Bankers' letters-of-credit, circular-notes and marginal-bills, as also Bank of England notes, are easily negotiable at the rate of about four dollars and eighty cents to the pound sterling (\$4.80 = £1).

(See also *N.B.* on page 10.)

Respectfully submitted.

The foregoing report was adopted by the Executive Committee, and ordered to be transmitted.

H. McLENNAN,
Chairman Ex. Com

MONTREAL, February 9th, 1884.

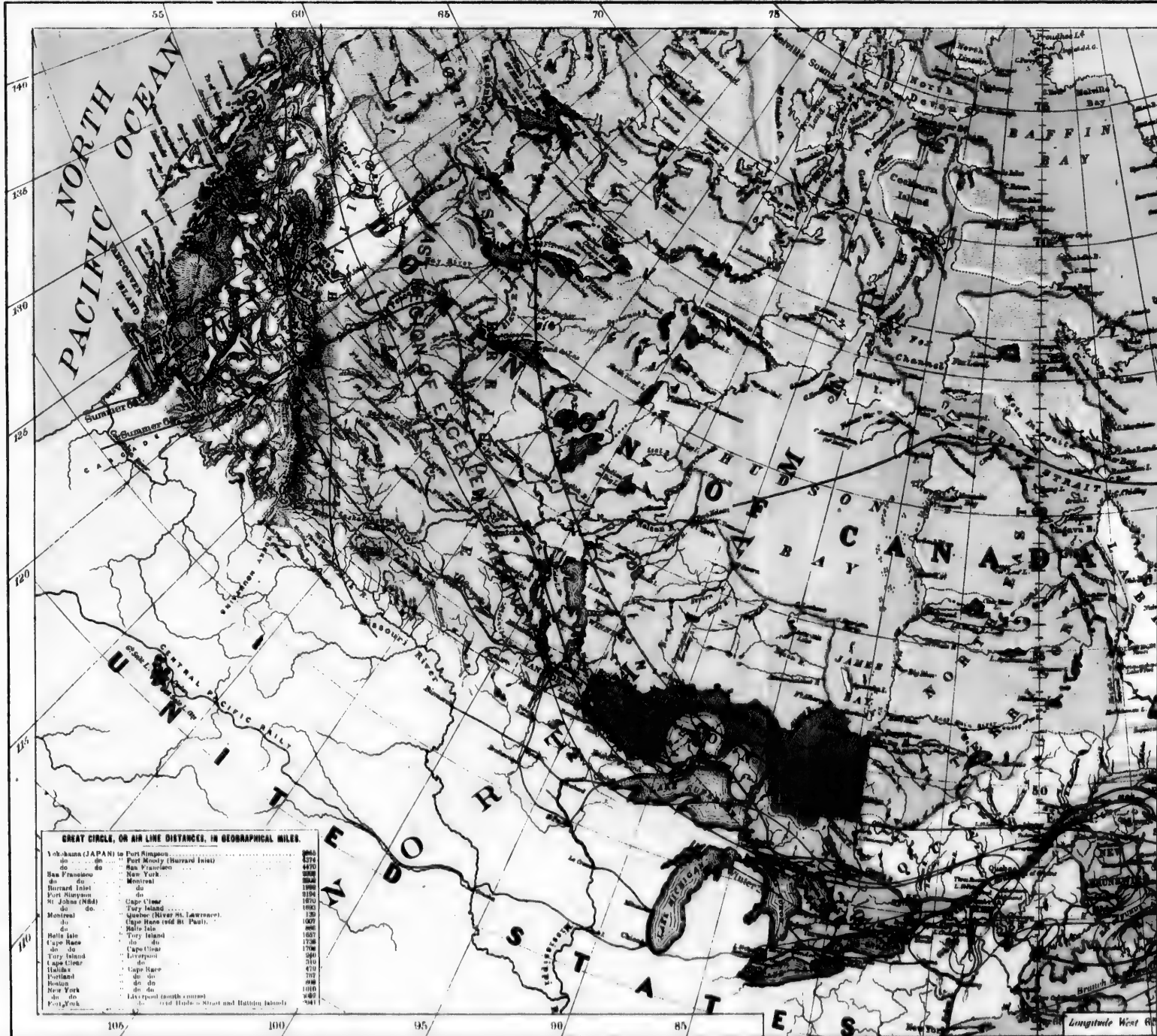
TABLE SHEWING THE TOTAL AVERAGE COST (*Exclusive of Government Grant*) OF THE
THROUGH RETURN-JOURNEY BETWEEN LIVERPOOL AND MONTREAL.

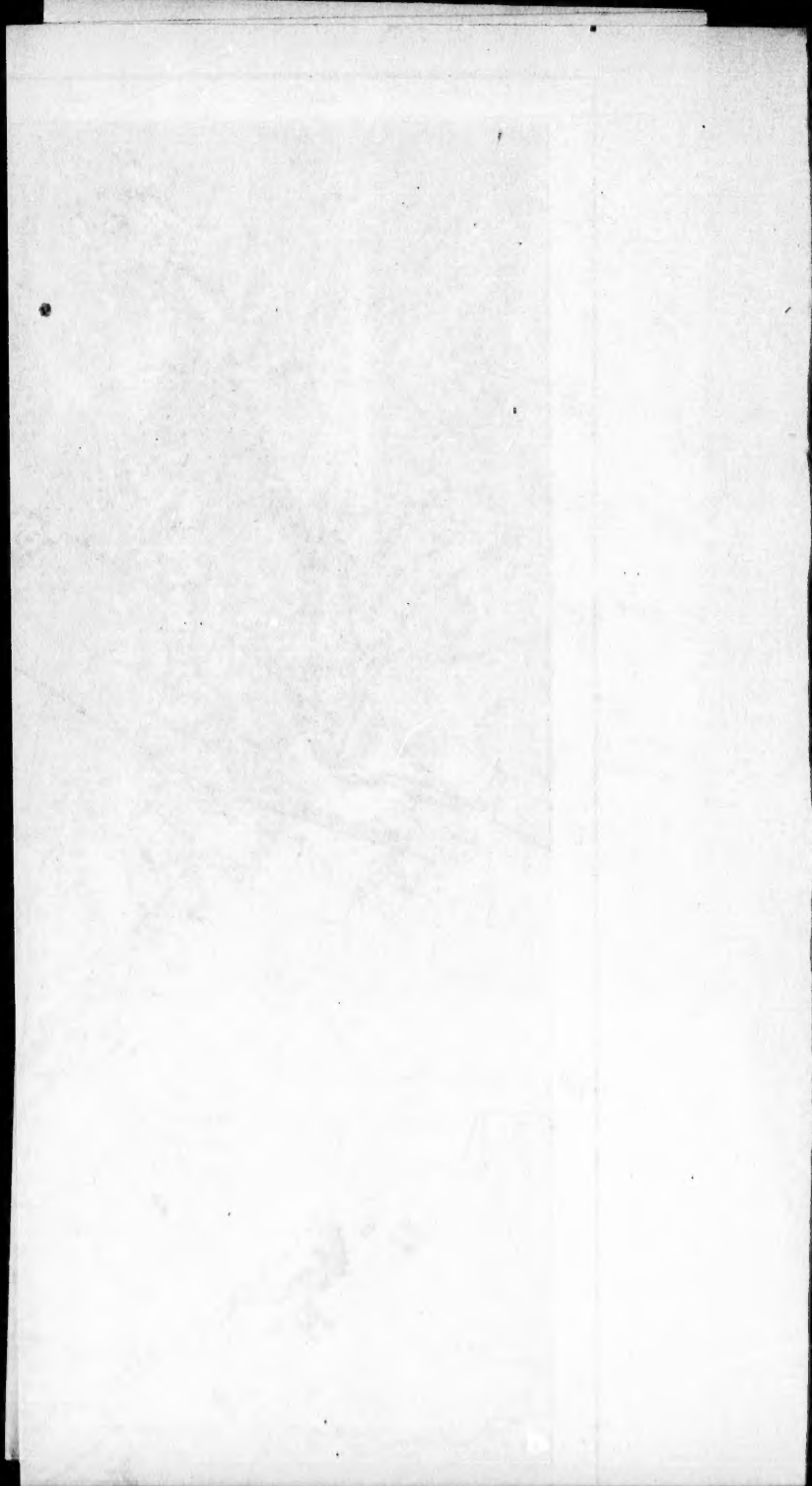
COST OF OCEAN STEAMER RETURN-PASSAGE.				AVERAGE COST OF DOUBLE RAIL- WAY JOURNEY.	TOTAL AVERAGE COST.
	CABINS WITH 3 OR MORE BERTHS.		CABINS WITH 2 BERTHS.		BETTER CABINS.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Via Allan Line and Quebec (Regular).....	19 19 0	23 2 0	28 7 0	0 14 7	£ s. d. 22 16 7
" Allan Line and Halifax (Regular).....	Same.	Same.	Same.	Same.	Same.
" Allan Line and Quebec (Special).....	Same.	Same.	Same.	Same.	Same.
" Dominion Line and Quebec (Regular).....	17 0 0	21 0 0	.....	0 14 7	21 14 7
" Dominion Line and Quebec (Special).....	20 0 0	24 0 0	.....	0 14 7	24 14 7
" Beaver Line (Can. S. Co's.) and Quebec.....	18 0 0	.....	.....	0 14 7	18 14 7
" Beaver Line (Can. S. Co's.) and Montreal.....	18 0 0	.....	.....	.....	18 0 0
" White Star Line and New York (Regular).....	22 0 0	25 0 0	30 0 0	2 5 10	27 5 10
" White Star Line and New York (Special).....	31 10 0	31 10 0	36 15 0	2 5 10	33 15 10
" Cunard Line and New York.....	31 10 0	31 10 0	36 15 0	1 15 5	33 5 5
" Cunard Line and Boston.....	31 10 0	25 0 0	30 0 0	2 5 10	27 5 10
" Guion Line and New York.....	22 0 0	26 5 0	31 10 0	2 5 10	28 10 10
" Anchor Line and New York.....	.....	.....	.....	2 5 10	23 5 10
" Monarch Line (sails from London) and New York	21 0 0	.....	.....	2 5 10	23 5 10

TABLE OF ROUTES, DISTANCES AND FARES.

TERMINI.	RAILWAYS, ROUTES, ETC.	DISTANCE. <i>Miles.</i>	RATE FOR ROUND TRIP.
MONTREAL AND NEW YORK.....	Via G. T. D. & H. C. C. N. Y. W. S. & B. R. R.'s	382	\$11.00 = £2 5s. 10d.
"	" G. T. D. & H. C. C. N. Y. C. & H. R. R. R's	383	11.00 = 2 5s. 10d.
"	" G. T. D. & H. C. C. R. R's, People's Line of Steamers (night) between Albany and New York.....	383	10.20 = 2 2s. 6d.
"	" G. T. D. & H. C. C. R. R's, Day Line of Steamers between Albany and New York.....	383	10.70 = 2 4s. 7d.
"	" G. T. D. & H. C. C. R. R's, Lake Champlain by Steamer, and by any of the above routes between Albany and New York.....	396	11.00 = 2 5s. 10d.
"	" G. T. D. & H. C. C. R. R's, Lakes Champlain and George by Steamer, and by any of the above routes between Albany and New York.....	396	13.55 = 2 10s. 4d.
"	" G. T. C. V., E. & R., T. & B., N. Y. C. & H. R. R. R's	452	11.00 = 2 5s. 10d.
"	" Penn. Ry.	90	4.00 = 0 16s. 8d.
"	" G. T. C. V., N. C. B. & L. R. R's	335	9.00 = 1 17s. 6d.
"	" G. T. C. V., Cheshire & Fitch.....	345	9.00 = 1 17s. 6d.
"	" G. T. R. to Portland, and thence to Boston by B. & M. Ry. G. T. R. to Portland, and thence to Boston by Eastern Ry. G. T. R. to Portland, and thence to Boston by Portland Steamship Co.	413	8.50 = 1 15s. 5d.
"	" G. T. R. to Portland, and thence to Boston by Portland Steamship Co.	405	8.50 = 1 15s. 5d.
"	" G. T. Ry.	417	8.00 = 1 13s. 4d.
"	" N. S. Ry.	172	3.50 = 0 14s. 7d.
"	" St. Lawrence by the Richelieu & Ontario Nav. Co.	172	3.50 = 0 14s. 7d.
"	" G. T. and Can. Atl. Ry.s	180	2.50 = 0 10s. 5d.
"	" G. T. Ry. and Ottawa Riv. Nav. Co. (<i>Return by Rapids</i>)..	115	3.50 = 0 14s. 7d.
"	" G. T. Ry. and return by Steamer over Rapids	130	4.00 = 0 16s. 8d.
"	" G. T. Ry. " " " " " " " " " "	74	0.95 = 0 4s. 0d.
"	" G. T. Ry. " " " " " " " " " "	134	1.70 = 0 7s. 0d.
PHILADELPHIA AND NEW YORK			
MONTREAL AND BOSTON			
MONTREAL AND QUEBEC			
MONTREAL AND OTTAWA			
MONTREAL AND CORNWALL			
MONTREAL AND TORONTO			







CITIZENS' COMMITTEE.

MR. THOS. WHITE, M.P., *Chairman.*

MR. E. J. BARBEAU, *Treasurer.*

MR. S. C. STEVENSON, *Rec. Secy.*

DR. B. J. HARRINGTON, *Cor. Secy.*

EXECUTIVE COMMITTEE.

MR. HUGH McLENNAN, *Chairman.*

MR. J. D. CRAWFORD, *Gen. Secy.*

OFFICES OF THE CITIZENS' EXECUTIVE COMMITTEE:—

MOLSONS BANK CHAMBERS, 198 St. James Street, Montreal.